

B. Claims

The following is a complete listing of the claims, and replaces all earlier versions and listings.

1. (Currently Amended) A fabrication method of a mold for a microlens having a desired radius (R) of curvature, said method comprising the steps of:
 - (a) preparing a substrate at least a portion of which is electrically conductive;
 - (b) forming an insulating mask layer on the conductive portion of the substrate;
 - (c) forming an opening in the mask layer to expose the conductive portion of the substrate at the opening; and
 - (d) performing electroplating to form the mold with the desired radius (R) of curvature using the conductive portion of the substrate as a cathode to deposit a plated layer in the opening and on the mask layer,wherein the plated layer forms a minimum radius (R_{\min}) of curvature in said step (d) that is smaller than the desired radius (R) of curvature.
2. (Original) The method according to claim 1, wherein a diameter or width (ϕ) of the opening is such that $\phi \leq 0.35R$.
3. (Original) The method according to claim 1, wherein a diameter or width (ϕ) of the opening and the minimum radius (R_{\min}) of curvature are such that $\phi = 0.35R_{\min}$.

4. (Original) The method according to claim 1, wherein a diameter or width (ϕ) of the opening is at least 10 μm .

5. (Original) A fabrication method of a mold for a microlens having a desired radius (R) of curvature, said method comprising the steps of:

(a) preparing a substrate at least a portion of which is electrically conductive;

(b) forming an insulating mask layer on the conductive portion of the substrate;

(c) forming an opening in the mask layer to expose the conductive portion of the substrate at the opening,

(d) performing electroplating using the conductive portion of the substrate as a cathode to deposit a plated layer in the opening and on the mask layer; and

(e) terminating electroplating when the plated layer reaches the desired radius (R) of curvature after forming a minimum radius (R_{\min}) of curvature.

6. (Original) The method according to claim 5, wherein the plated layer reaches the desired radius in said step (e) by increasing the curvature radius from the minimum radius (R_{\min}) of curvature.

7. (Original) The method according to claim 5, wherein said step (d) comprises causing a current to flow between the cathode and an anode plate in an electroplating bath and said step (e) comprises ending the current flow.

8. (Original) The method according to claim 5, wherein a diameter or width (ϕ) of the opening is at least 10 μm .

9. (Original) A fabrication method of a microlens having a desired radius (R) of curvature, said method comprising the steps of:

(a) preparing a substrate at least a portion of which is electrically conductive;

(b) forming an insulating mask layer on the conductive portion of the substrate;

(c) forming an opening in the mask layer to expose the conductive portion of the substrate at the opening,

(d) performing electroplating using the conductive portion of the substrate as a cathode to deposit a plated layer in the opening and on the mask layer;

(e) terminating electroplating when the plated layer reaches the desired radius (R) of curvature after forming a minimum radius (R_{\min}) of curvature;

(f) forming a mold on the substrate;

(g) separating the mold from the substrate;

(h) coating a lens material on the mold; and

(i) separating the lens material from the mold.